



Australian Government

## **National Land & Water Resources Audit**

*An initiative of the Australian Government*

# **SIGNIFICANT NATIVE SPECIES AND ECOLOGICAL COMMUNITIES**

INDICATOR HEADING

## **Status and trends of significant native species and ecological communities**

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INDICATOR PROTOCOLS

**Trends of occurrences of significant native  
species and ecological communities, and the  
threats affecting them**

**Status of significant native species and  
ecological communities, and changes in status  
over time**

### **Recommended by the Audit for further consideration**

This version of the protocol has been developed through the National Land and Water Resources Audit and was informed by expert review and broad consultation on national indicators via national coordination committees and their associates. Version 1 – June 2008 does not yet have the final endorsement of any jurisdiction. The document is for guidance only and is presented to provide a basis for on-going discussion. It may require further consideration by a jurisdictional based reference group before national endorsement.

**Status and trends of significant native species  
and ecological communities**

# Status of indicator agreement

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The National Land & Water Resources Audit (the Audit) coordinates the collation of data to support reporting on natural resource condition required under the National NRM Monitoring and Evaluation Framework (National M&E Framework).

The National M&E Framework identifies three requirements for monitoring natural resource condition:

- a set of resource condition indicators to measure progress toward the agreed national outcomes on a medium and long term basis
- a set of indicators for monitoring community and social processes relevant to or affected by NRM programs, as well as measures of the adoption of sustainable development and production techniques
- contextual data pertinent to the indicator being considered.

The Audit Advisory Council has agreed to a process for achieving a practical set of indicators under the National Monitoring and Evaluation Framework.

This process is to:

- obtain on-going **recommendations** from the relevant **National Coordination Committees** for each thematic area (including “Matters for Target”) on appropriate indicators, protocols and information needs
- seek **endorsement** from the **Audit Advisory Council** that the indicators and protocols can be implemented at the national, state / territory and regional levels
- seek **agreement** from the Natural Resource Policies and Programs Committee (**NRPPC**) (or the Marine and Coastal Committee –**MACC**- for Estuarine, Coastal and Marine) that the indicators will be used and promoted by jurisdictions to underpin evaluations of NRM initiatives.

The NRPPC and MACC report to the Natural Resource Management Ministerial Council (NRMMC).

# Significant Native Species and Ecological Communities

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## Matter for target:

Significant Native Species and Ecological Communities.

## Indicator heading:

Status and trends of significant native species and ecological communities.

## Indicator names:

Trends of occurrences of significant native species and ecological communities, and the threats affecting them.

Status of significant native species and ecological communities, and changes in status over time.

## I Definition

The term 'significant native species' includes:

- all taxa listed as extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependent under the *Environment Protection and Biodiversity Conservation Act 1999*;
- all taxa listed as threatened under relevant State and Territory legislation;
- all taxa not included in the points above but included in authoritative lists of species of conservation significance published by State and Territory conservation agencies.

The term 'significant native species' may also include:

- specified taxa considered to be ecologically significant (e.g. on the basis of their ecological function or value as an indicator);
- specified taxa considered to be of evolutionary significance (e.g. primitive, relictual, unique etc.);
- specified taxa considered to be culturally significant for indigenous or non-indigenous communities.

The term 'significant ecological community' includes:

- all ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999*;
- all ecological communities listed as threatened under relevant State and Territory legislation, and

- all ecological communities not included in the points above but included in authoritative lists of communities of conservation significance published by State and Territory conservation agencies.

The term 'significant ecological community' may also include:

- specified ecological communities considered to be ecologically significant (e.g. on the basis of their ecological function or value as an indicator);
- specified ecological communities considered to be of evolutionary significance (e.g. primitive, relictual, unique etc.), and
- specified ecological communities considered to be culturally significant for indigenous or non-indigenous communities.

Status of a significant native species is defined as the number of taxa assessed belonging to the various IUCN Red List categories at a whole of taxon or national scale. Changes in status over time means changes in the number of taxa assessed as belonging to the various IUCN Red List categories compared to an explicit reference point.

Status of significant ecological communities is defined as the number of ecological communities assessed as belonging to risk categories based on historic depletion, restricted extent, degradation, fragmentation and exposure to continuing or future threat. Assessments should apply to the bioregional scale. While there is currently no equivalent of the IUCN Red List categories and criteria for ecological communities, State and Territory conservation agencies have in many cases developed broadly consistent approaches. Changes in status over time means changes in the number of ecological communities assessed as belonging to the risk categories compared to an explicit reference point.

Trends of occurrences of significant native species is defined as a change over time in a key population parameter (or several population parameters integrated into an index).

Trends of occurrences of ecological communities is defined as a change over time in a key community parameter (or several community parameters integrated into an index).

Trends of threats affecting occurrences of significant native species is defined as a change over time in a key threat parameter (or several threat parameters integrated into an index).

Trends of threats affecting occurrences of ecological communities is defined as a change over time in a key threat parameter (or several threat parameters integrated into an index).

## 2 Rationale

### 2.1 Why do we want to know it?

Significant native species and ecological communities are considered to be important natural values or assets. This is reflected in the recognition afforded to them in international treaties, legislation, investment programs and within the broader community. Concern about further decline and possible extinction is widespread and is reflected in the prominence in the media and in public debate, especially in regard to development proposals or management regimes which have the potential to further threaten significant native species and ecological communities.

There are two fundamental questions that this indicator can inform:

*How are significant native species and ecological communities going?*

and

*How effective have our efforts to conserve them been?*

This indicator will directly inform the first question. However, the level of resourcing and appropriateness of monitoring programs will affect the reliability of the information produced.

The second question will only be indirectly answered by the this indicator.

Where there is a correlation between management action (or inaction), threat trend and population trend, there is *prima facie* evidence of a causal relationship. This relationship can only be tested scientifically through a properly designed, controlled experiment. Such experiments should be conducted in a wide range of circumstances. However, it is highly unlikely that sufficient resources will be available to conduct experiments in relation to all major threats at all important occurrences of all significant native species and ecological communities.

In summary, the primary purpose of this protocol is to provide a measure of improvement or deterioration in significant native species and ecological communities. The secondary purpose is to provide evidence as to the effectiveness of conservation programs.

## **2.2 Context in which it has been measured with regard to national, state and regional resource management programs**

These indicators exist within a broader statutory, institutional and policy context.

Throughout the world, significant native species and ecological communities are recognised as key components of biological diversity or biodiversity. There is also a global recognition of the continuing loss of biodiversity. Australia is a signatory to the United Nations Convention on Biological Diversity, reflecting widespread recognition of the need to address biodiversity loss. In 2002, the Parties to the Convention agreed to a target “to achieve by 2010 a significant reduction of the current rate of biodiversity loss”.

The key drivers for biodiversity monitoring and reporting in Australia include statutory obligations and policy commitments at the Australian Government level relating to:

- the Convention on Biological Diversity;
- the *Environment Protection and Biodiversity Conservation Act 1999*;
- the National Strategy for the Conservation of Australia's Biological Diversity;
- the Caring for Our Country program;
- associated requirements under the National Natural Resource Management Monitoring Evaluation Reporting And Improvement (MERI) Framework;
- national State of the Environment Reporting, and
- periodic national biodiversity assessments.

At the State and Territory level, similar statutory obligations and policy commitments exist, including monitoring, evaluation and reporting requirements under:

- legislation relating to biodiversity conservation, including threatened species and ecological communities
- biodiversity strategies
- State of the Environment Reporting (including State of the Parks, State of the Forests reporting in some jurisdictions)
- State and Territory natural resource management programs.

At a regional level, this indicator will assist regional natural resource management bodies to set and report against resource condition targets and indirectly to evaluate the effectiveness of their investment.

### **3 Monitoring methodology**

#### **3.1 Monitoring parameters and techniques**

##### ***Trends of occurrences of significant native species and ecological communities, and the threats affecting them.***

In contrast to other matters for target, the sheer diversity and complexity of significant native species and ecological communities combined with the technical challenges of measuring certain parameters (such as abundance) across the range of species and communities means that it is neither feasible nor particularly informative to specify parameters and associated monitoring methods.

Organisations with responsibility for monitoring must decide on the parameters and associated monitoring methods of greatest relevance to the circumstances, including consideration of the biology/ecology of the species or community, the threats affecting the occurrence and the resources available for monitoring. This decision should be based on the best advice available.

However, it is the responsibility of the State and Territory conservation agencies to maintain records of the parameters measured, the data collection and analysis techniques employed and the level of reliability of the results obtained.

In many cases, State and Territory conservation agencies maintain manuals or standard operating procedures for monitoring species and ecological communities. These should be applied where they exist. Some useful published guidelines including Vesely et al. (2006.) In the absence of manuals or procedures, advice should be sought from the relevant agency.

##### ***Status of significant native species and ecological communities, and changes in status over time.***

The key parameters which contribute to an assessment under the IUCN Red List categories and criteria include extent of occurrence, area of occupancy, number of subpopulations and number of mature individuals. A range of techniques exist to determine the presence or abundance of taxa. The most appropriate will vary according to the taxon in question, habitat accessibility and the level of resources available. Advice should be sought from the relevant State and Territory conservation agency.

A range of techniques is available for assessing the status of ecological communities in regard to the key parameters: areal extent, historic depletion, fragmentation, condition and exposure to ongoing threats and future risks. Better alignment of the existing State and Territory-based categories and criteria is a priority for further development. The selection of techniques to monitor these parameters will depend on the same circumstances as for taxa. Advice should again be sought from the relevant State and Territory conservation agency.

#### **3.2 Species and ecological communities selection.**

##### ***Trends of occurrences of significant native species and ecological communities, and the threats affecting them.***

The selection of significant native species and ecological communities to be included in monitoring and reporting in relation to this indicator is not prescribed.

Agencies responsible for monitoring and reporting (and those investing in monitoring and reporting) must determine the optimal set of species and communities, and of occurrences thereof, on which to focus.

*Status of significant native species and ecological communities, and changes in status over time.*

In regard to this indicator, it is necessary that all species and communities that meet the criteria for significance are included in monitoring and reporting and that monitoring and reporting is based on the full extent of the species or community within the bioregion or jurisdiction.

### **3.3 Monitoring location selection**

*Trends of occurrences of significant native species and ecological communities, and the threats affecting them.*

It is desirable that the set of occurrences of species and ecological communities selected for monitoring and reporting is representative of the range of taxonomic groups and ecosystems occurring within the bioregion or jurisdiction.

It is also desirable that the set of occurrences of species and ecological communities selected for monitoring and reporting is not strongly biased towards occurrences that are the subject of specific, active management.

*Status of significant native species and ecological communities, and changes in status over time.*

The gathering of data to inform status assessments for both taxa and communities should at a minimum target the most important (i.e. largest, most extensive) occurrences. However, there are also arguments in favour of targetting occurrences at the periphery of the item's geographic distribution or environmental tolerances, as these may signal future trends sooner and more sharply than the core part of the distribution. Ideally, data should be obtained for as much of the distribution as possible.

### **3.4 Monitoring frequency required**

*Trends of occurrences of significant native species and ecological communities, and the threats affecting them.*

The frequency of monitoring in relation to this indicator is not prescribed and will be determined in most cases by the specific objectives and the financial and logistical constraints of the monitoring program.

*Status of significant native species and ecological communities, and changes in status over time.*

Similarly, the collection of data to inform the assessment of status may occur more or less frequently, depending on resources.

For both indicators, the more frequent the monitoring, generally the more reliable the information obtained.

### **3.5 Data measurement method**

For both indicators, the appropriate method for measurement will vary according to the parameter being measured and the method adopted. This will usually be based on the types of equipment available to the organisation responsible for monitoring, access to the environment in which monitoring is to take place and the time and other resources available.

### **3.6 Data collation / calculation method**

*Trends of occurrences of significant native species and ecological communities, and the threats affecting them.*

For each occurrence, a *trend category* (deteriorating, stable, improving, inconclusive or unknown) would be assigned, together with a *reliability category* (see section 3.9). While there might be a level of uncertainty, the most probable trend category should be assigned. Trend categories are assigned for *population trend* (for taxa), *community trend* (for ecological communities) and *threat trend* (for

threats). The trends can be based on one or more parameters. Where more than one parameter is used, the overall trend is based on a combination or index, which may or may not be weighted.

In addition to the trend and reliability, data must be collected and stored for each occurrence that provides:

- identity information about the taxon or ecological community;
- the spatial location of the occurrence and the rationale for defining the occurrence;
- the parameter(s) used and monitoring techniques employed;
- the time period to which they apply;
- details of the source of evidence, and
- contact information for the person/organisation responsible for monitoring.

***Status of significant native species and ecological communities, and changes in status over time.***

For each taxon or ecological community, data should be assembled at a whole of State/Territory level for submission to a national collation process.

For taxa, the data should be documented according to the minimum requirements set out in Annex 3 of the IUCN Red List categories and criteria (IUCN 2001) and paying heed to the guidelines for dealing with uncertainty (Annex 1). Data collation would occur at a national level and would require careful aggregation of data, in co-operation with State/Territory officials. The use of an application such as RAMAS<sup>®</sup> (Akçakaya and Ferson 2001) would be advantageous.

For ecological communities, the development of agreed national categories and criteria would be highly desirable. The data collation process would then be similar to that described for taxa.

### **3.7 Data storage and management**

***Trends of occurrences of significant native species and ecological communities, and the threats affecting them.***

State/Territory conservation agencies would be responsible for maintaining databases to store, analyse and retrieve trend data. Data entry, data export and reporting functions could be facilitated by the use of web-based applications, with appropriate user registration requirements.

***Status of significant native species and ecological communities, and changes in status over time.***

State/Territory conservation agencies would be responsible for maintaining databases to store and export jurisdictional subsets of the status data. The relevant Australian Government agency would be responsible for national data collation, storage, analysis and reporting.

### **3.8 Data analysis and interpretation**

***Trends of occurrences of significant native species and ecological communities, and the threats affecting them.***

For each occurrence, there will exist a trend for the taxon or ecological community and a trend for 'threats'. Each trend will be accompanied by an estimate of reliability, based on the evidence categories in section 3.9. Drilling down into the data will provide information on the key asset or threat parameter (or index) on which the trend was based. Aggregating these data at various geographic levels will allow for a range of analysis and interpretation, including patterns of trends or patterns of reliability according to asset or threat type.

This could provide evidence for conclusions such as “birds are generally faring better than frogs” or “trend data for threats is more reliable for predation than for dieback disease”. Such conclusions, if validated, could influence shifts in resources to address gaps or shortfalls.

As occurrences can be linked to other spatial data, analyses of trends by regions (both administrative and biological), land tenure and land use would also be possible.

#### *Status of significant native species and ecological communities, and changes in status over time.*

For taxa, data relating to the IUCN Red List assessment would be collected and prepared for collation at a State/Territory level. It would be relatively simple to standardise the format of data if an application such as RAMAS is used. It would be necessary to check that any inconsistencies in the data arising from jurisdictional boundaries or from different interpretations of terminology or use of different technique were satisfactorily resolved. It would then be possible to generate best estimates and confidence bounds for each of the key parameters. This would yield a draft assessment for each taxon which could then be subject to a peer review process for endorsement.

For ecological communities, a similar process could be followed, assuming that consistent categories and criteria can be developed.

### **3.9 Reliability, validity and quality assurance**

#### *Trends of occurrences of significant native species and ecological communities, and the threats affecting them.*

It is essential that information is recorded about the quality of evidence used to determine or estimate trends. While more sophisticated approaches are possible, the adoption of the simple classification system based on that for the indicator “extent, density and distribution of weeds” is recommended:

- No data;
- Anecdotal information from ad-hoc sources and incidental reports. No reliable expert knowledge or survey data available;
- Expert opinion from experts and local specialists providing a general knowledge based on observations and other sources;
- Some data available plus some extrapolation or expert opinion, and
- Scientific data from structured surveys; systematic sampling and appropriate analysis and/or information based on a high level of expert knowledge.

#### *Status of significant native species and ecological communities, and changes in status over time.*

Assessments according to the IUCN Red List climate change would need to address the issue of reliability by applying the guidelines set out in the relevant IUCN documentation (IUCN 2001 and IUCN 2003).

A similar approach could be developed and applied to ecological communities, as part of the recommended national alignment of categories and criteria for assessing conservation status.

### **3.10 Metadata**

A metadata statement applying to each of the indicators and their components must be prepared and in compliance with ANZLIC standards, which are available at <http://www.anzlic.org.au/policies.html>.

Note ANZLIC is working towards the international ISO 19115 standard.

## 4 Reporting / information products

### 4.1 Audiences

The main audiences for information arising from these indicators will be the Governments that develop policies and programs for natural resource management and the communities that are aware of and concerned about biodiversity loss or actively engaged in its conservation.

There are also a range of users of the information, such as national, state and local government agencies who will incorporate the information into broader biodiversity, natural resource management or sustainable development and evaluation of strategies and plans, and into reporting processes such as State of the Environment reports.

Regional natural resource management organisations will use the information to set and report against resource condition targets and in the development of their regional investment strategies. Land managers and investors will use the information as an input to decision-making and priority-setting.

Community groups with a “hands-on” focus on particular occurrences of species or communities, or on a local area, will be able to use the information on local trends as evidence of their progressive achievements. This is rarely possible using indicators based solely on conservation status.

### 4.2 Products

*Trends of occurrences of significant native species and ecological communities and the threats affecting them.*

Summary reports based on trend patterns (number or proportion in each trend category according to reliability, taxonomic group, habitat type, threat type, bioregion, land tenure, etc) could be generated and made publicly available via printed media or agency websites. Such products would be particularly useful at regional levels, including for comparisons between regions.

*Status of significant native species and ecological communities, and changes in status over time.*

Summary reports based on numbers of taxa or ecological communities in the various categories could be presented in tabular or chart form. Summary reports based on changes over time, expressed as a proportion or in absolute terms, could also be generated. More detailed reports that divide the data based on taxonomic groups or habitat types could also be generated and made publicly available via printed media or agency websites.

### 4.3 Confidentiality

*Trends of occurrences of significant native species and ecological communities, and the threats affecting them.*

There is a small risk that availability of information on the precise spatial location of certain taxa or ecological communities may lead to deliberate damage, destruction or theft. These data are generally held by State and Territory conservation agencies and in some cases by the Australian Government Department of Environment, Water, Heritage and the Arts. This risk exists now wherever such data is stored or made available, either publicly or within organisations. The risk is generally managed by concealing or blurring the precise location.

Confidentiality in relation to matters covered by privacy legislation would need to be addressed in the detail data storage and reporting protocols, to be developed.

*Status of significant native species and ecological communities, and changes in status over time.*

There are no confidentiality issues associated with this indicator.

### 4.4 Data collation/calculation method

Refer to section 3.6.

## 4.5 Data analysis, integration and interpretation information

Refer to section 3.8.

## 4.6 Data access and storage

Refer to section 3.7.

## 4.7 Product definition statement

Each product should have a product definition statement refer to Attachment A. The product definition statement follows the same general format as the metadata statement referred to in 3.8 above.

# 5. Current national activities

This protocol generally aligns with programs and initiatives in the States and Territories including:

The 'Back on Track' program, the Recovery Actions Database (RAD) and the comprehensive identification and mapping of regional ecosystems across Queensland by the Queensland Environment Protection Agency.

The development of the Priority Actions Statement (PAS) and a monitoring and evaluation program for threatened species for New South Wales by the NSW Department of Environment and Climate Change .

The preparation of a report titled 'Monitoring Biodiversity in the Northern Territory' (Griffiths *et al.* 2008) by Northern Territory Department of Natural Resources, Environment and the Arts. The report makes a series of recommendations regarding the development of a biodiversity monitoring framework.

The launching by the South Australian Government of 'No Species Loss - A Biodiversity Strategy for South Australia 2006-2016. The strategy has a timeframe of 25 years.

The development of the Natural Values Atlas by the Tasmanian Department of Primary Industries and Water, together with publication of the *Threatened Species Strategy for*, which includes an action to monitor the condition of threatened species, classification, description and establishment of benchmarks for native vegetation (TasVeg), and publication of a technical manual for vegetation monitoring (Barker 2001).

The development and implementation of a range of native vegetation-related initiatives in Victoria by the Department of Sustainability and Environment including classification, conservation status assessment, mapping and the "habitat-hectare" condition assessment approach, and the development of the Actions for Biodiversity Conservation (ABC) system designed to monitor management activity and record and report on the state and trends for threatened species & communities.

The production by the WA Department of Environment and Conservation of *A Strategic Plan for Biodiversity Conservation Research 2008 – 2017* including providing the scientific basis for the development of cost-effective protocols for monitoring resource condition at various scales (landscape, ecosystem, protected area and species) and establishment of climate change monitoring protocols and priorities for 'at risk' species, communities and ecosystems. DEC (WA) has also initiated a resource condition monitoring program to be based monitoring protocols incorporated into a set of standard operating procedures. There also exist a well-established plant population monitoring database and a database for threatened ecological communities. DEC (WA) has also developed IUCN-style criteria for assessing the conservation status of ecological communities.

State and Territory conservation agencies already have established processes to assess the status of significant native species and ecological communities and to gather data to support these assessments.

The indicators are designed in recognition of the fact that, in some regions, there will be a paucity of information on the state and trends of significant native species and ecological communities. It is important that information deficiencies do not preclude the use of the indicators. The indicator allows jurisdictions to start with relatively patchy and unreliable data but also provides incentives to progressively improve the representativeness and reliability of the data.

Broad adoption of the indicators and the underlying systems and processes will be highly beneficial in terms of avoiding duplication and achieving a better, more robust result.

## **6. Future development**

Further work is required to develop and refine the following:

- Criteria for inclusion of species and ecological communities on the basis of their ecological, evolutionary or cultural importance;
- Systems and processes for aggregating IUCN Red List data for significant native species;
- Improved alignment of State and Territory categories and criteria for identifying ecological communities at risk;
- Measures to address the representation of reliability and uncertainty in status and trend data;
- Standards for access, use and interpretation of data at various levels;
- Standards for recording and interpreting trend information
- Options to reduce bias and subjectivity in the collection of expert opinion, and
- Options for integrating data on “trends of occurrences of significant native species and ecological communities, and the threats affecting them” with management activity, to enable more reliable analysis of effectiveness.
- Measures to manage the risk that availability of information on the precise spatial location of certain taxa or ecological communities may lead to deliberate damage, destruction or theft.

It is recommended that working group including Australian Government representatives, State and Territory Government representatives and key researchers be established for 12 – 18 months to further refine the protocol and associated information systems and processes.

## **7. Links to other indicators**

This set of indicators is linked to following natural resource management indicator headings and associated indicators:

- Selected ecologically significant invasive vegetation species extent and impact
- Extent and impact of selected ecologically significant vertebrate invasive species extent and impact
- Estuarine, coastal and marine habitat extent and distribution
- River condition
- Wetland ecosystem extent and distribution

- Wetland ecosystem condition
- Native vegetation extent and distribution
- Native vegetation condition

## 8. Further information

Akçakaya, H.R. and Ferson, S. 2001. *RAMAS® Red List: Threatened Species Classifications under Uncertainty*. Version 2.0. Applied Biomathematics, New York.

Barker, P. (2001) *A Technical Manual For Vegetation Monitoring*. Resource Management and Conservation. Department of Primary Industries, Water and Environment, Hobart.

Griffiths, A.D., Price, O.F and Berghout, M.B. (2007) *Monitoring Biodiversity in the Northern Territory*. Report to Natural Resource Management Board (NT). Department of Natural Resources, Environment and the Arts, Palmerston NT.

Elzinga, C.L., Salzer, D.W., Willoughby, J.W., and Gibbs, J.P. (2001) *Monitoring plant and animal populations*. Blackwell, Oxford, UK.

IUCN (2001) *IUCN Red List Categories and Criteria: Version 3.1*. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

IUCN (2003) *Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.0*. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK.

Secretariat of the Convention on Biological Diversity (2005). *Handbook of the Convention on Biological Diversity Including its Cartagena Protocol on Biosafety*, 3rd edition, (Montreal, Canada).

Vesely, D.; McComb, B.C.; Vojta, C.D.; Suring, L.H.; Halaj, J.; Holthausen, R.S.; Zuckerberg, B.; Manley, P.M. (2006) *Development of Protocols To Inventory or Monitor Wildlife, Fish, or Rare Plants*. Gen. Tech. Rep. WO-72. Washington, DC: U.S. Department of Agriculture, Forest Service. 100 p.

## 9. Glossary

### Ecological community

An ecological community is an assemblage of flora and fauna taxa occurring together in the wild. In many cases within the terrestrial biome, the definition of ecological communities will be based on native vegetation and will align with national standards. However, there will also be ecological communities, such as the Cave Root Mat communities in Western Australia or the San Remo Marine Community in Victoria that are defined on a different basis. It might be necessary to develop national guidelines and standards for the identification and description of non-native vegetation based ecological communities to improve consistency between jurisdictions.

### Evaluation

Evaluation is the act of assessing the value or worth of something. In natural resource management terms, evaluation is the process of determining the effectiveness of a given program or intervention in achieving specified objectives.

**Monitoring**

Monitoring is the act of observing or collecting and analysing data in regard to a particular item or process, usually repeated periodically and with the intent of detecting change, if any, over time.

**Occurrence**

An occurrence is a user-defined geographic unit within the distribution of a significant native species or ecological community. It might equate to a single population of a species or a stand of an ecological community. Equally, it might group populations or stands within a land management unit such as a National Park in order to simplify reporting. Conversely, it might be a subdivision of a widespread population of stand on the basis of land tenure or regional/bioregion boundaries. It is more an administrative construct than a biological concept.

**Reported occurrence**

A reported occurrence is an occurrence that is subject to monitoring and reporting.

**Threat**

A threat is factor that is or has the potential to have deleterious effects on a population or its habitat or on an occurrence of an ecological community. Threats include factors that are currently operating as well as risks that, while not currently affecting the asset, might lead, directly or indirectly, to future impacts.

**Trend**

A trend is a direction of movement in the state of a parameter or condition over time.

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## Appendix A

### Information product template (V2.2)

<b>Information Product Name</b>		
<b>Product ID or reference number</b>	Jurisdiction, agency or custodian's reference number if applicable.	
<b>URL for product metadata</b>	A webpage reference to where more comprehensive details of the product are recorded.	
<b>Jurisdiction</b>		
<b>Custodian</b>		
<b>Contact details</b>	Relevant person, position, branch/unit/section, location and phone, email contacts.	

<b>Relevant Matter for Target</b>	Which NM&EF Matter for Target does this product relate to?	
<b>Relevant National Indicator</b>	Which NM&EF Indicator(s), if any, does this product relate to?	
<b>Relevant State/Territory Indicator</b>	Which State/Territory Indicator(s), if any, does this product relate to?	

<b>Description</b>	Provide a brief description of the product including the purpose and the output file format.	
<b>Source data name and ASDD link</b>	Name all the source dataset(s) used to produce the product. Provide references to metadata for source datasets used. This should be either the ASDD metadata reference or other URL. If any source dataset is not already described to ASDD Page 0 standard, please complete the accompanying template.	
<b>Source data attributes used</b>	Please list the attributes used from each of the source datasets to produce the information product.	
<b>Processing of source data</b>	Please describe the steps taken in processing and combining the source data to produce the information product.	

<b>Status</b>	What is the current status of the product? If the product is "In progress" or "Is planned", please complete as many of the remaining descriptors as are known.	Currently exists In progress Is planned
<b>Coverage</b>	How much of the State/Territory distribution of the resource (or applicable part of the State/Territory) is covered by the product?	80-100% 50-80% 20-50% 0-20%
<b>Recency</b>	What is the age of the dominant contributing data?	2005-2000 2000-1995 1995-1985 1985-1970 1970-1950 <1950
<b>Trend</b>	Does the dataset support trend interpretation?	Sequence (e.g. river flow, rainfall) Multiple (few) (e.g. land use 1990 & 2000) Single (e.g. soil type)
<b>Usability scale</b>	What is the finest resolution that maintains confidence in the product, i.e. not to be used at 1:100,000 or less.	a. Local b. Regional c. State d. National
<b>Availability</b>	What is the public availability of the product? Is a licence required for outside users?	a. Open b. Restricted/licence c. Closed
<b>Delivery</b>	How is the product best delivered?	a. Web Services b. Digital data c. Electronic document d. Paper document
<b>Content type</b>	What type of information does the product represent?	a. Real data b. Mixture of real & modelled data c. Modelled data
<b>Update</b>	What will be the frequency of update for the product?	Frequently At least once/planned Not planned/unknown
<b>Other relevant information</b>	Please add any other important information relevant to this information product that should be known.	